The NEW MORSE CODE MANUAL

4th EDITION

MAKES STUDY SIMPLE AND ABSORBINGLY INTERESTING

RECOMMENDED BY THOUSANDS OF SUCCESSFUL SERVICES STUDENTS

1/3

COPYRIGHT

THE NEW MORSE CODE MANUAL

ARRANGED BY

A. W. ELEY

PUBLISHED AT
24 GRANBY STREET
LEICESTER

(Fourth Edition)

The Air Ministry recognise this publication as a Text Book for the Air Training Corps and for men who have enrolled in the R.A.F.V.R. for eventual service in the R.A.F., who are undergoing pre-entry training while on deferred service prior to being called up.

The photographic reproductions in this Manual are by permission of The Ministry of Information.

RADIO WARFARE

SIGNALLING is the means whereby the Command issues its orders to the three fighting Services. The tremendous role that Radio plays is of paramount importance and shows it is impossible to carry on any maior military campaign either in the Army, Navy or Air Force, without its use.

The Forces must develop radio co-ordination and use radio as it never has been known or used before. so much so, that every single unit or brigade has instant radio communication with the general staff. That co-ordination, between all units of the fighting forces, may incidentally save thousands of lives.

Infantry fully equipped, will find it unnecessary to expose itself to the enemy's fire or attack, till the word is given by radio to advance, and perhaps the most important thing is to know exactly *when* to advance. Mechanised units operating with tanks can drive back the enemy, and when the infantry is told by radio to advance, the losses will be astonishingly low when compared with all rules of former warfare, when the attacking army had a greater percentage of losses.

General Headquarters today are more interested in radio tactics than ever before, because field, sea and air forces must all work together as a single unit; the unit could be so exact that field forces could not advance even for ten yards, without the General Headquarters being fully aware of it. This is also true of radio-equipped motor cycle advance guards, who can always be in constant touch with their superiors.

During the Great War (1914-1918) many thousands of men were taken from the British Telegraph Service ; these men had the knowledge of the Morse Code because during the period mentioned, the Post Office had in operation the Morse Code Telegraph System. Since the last war, this system has been entirely replaced by the telephone and the teleprinter. In the latter system, a girl types the message at one end and it is received in type at the other. It is due to these two new systems that Morse operating is dead in the Post Office service, consequently the personnel is no longer available in great numbers during this war and the problem of training men quickly to fulfil a necessary need for Wireless Operators, is one only recently tackled by the Authorities.

Apart from Flag and Lamp Signals, Wireless is the only proposition when it comes to working with armoured divisions to provide intercommunication with Headquarters. Tank units now have signal sections of the Royal Corps of Signals attached to them.

At the moment, the need for men having a knowledge of the Morse Code is greater than the supply. The Command of the Home Guard has suddenly decided that each Company must have a certain number of men who have knowledge of the Morse Code for signalling purposes. Because of the now urgent need for training, I give to code students the explanation of this my system which has already proved such a success in the training of men for the THREE FIGHTING SERVICES at the training centre at Leicester.

The rapid success of the men trained was due to the revolutionary method of instruction. They learned quickly, because from the commencement they actually received and sent so that interest never flagged and progress was inevitable, as the teaching used advanced them and the acquiring of the essential knowledge became a fascinating process. The course is designed with this end in view.

A sound working knowledge of the Morse Code is essential and is the first item of study for a would-be operator. This great accomplishment can be attained at home or with an organized code class—the object of this Manual is to help to fulfil this. The speed required for both sending and receiving varies according to the Service standards, but the student should aim to send and receive 20 words per minute in straight language (5 letters constituting a word), 16 groups of 5 letter code per minute or 12 groups of 5 figure cipher per minute.

Speed can be obtained by carefully following the lessons laid down in this Manual coupled with MAINTAINING CONTINUED INTEREST, but of importance besides learning the actual code characters themselves is practice . . . . . PRACTICE . . . .

AND MORE PRACTICE

A. W. ELEY.

A LESSON IN SIGNALS.

The training of the technical personnel of the R.A.F. is one of the biggest jobs of the war—and here is a batch of new recruits taking lessons in MORSE at one of the R.A.F.'s largest Stations.

The High Road *To The R.A.F.*

The Air Training Corps for Boys came into official existence on Saturday, February 1st. Never before has the youth of our Country had so great an opportunity to respond to the call in a spirit of adventure and with proper sense of responsibility in being enthusiastic to undergo the preliminary training provided for youths who will go at a later date into the R.A.F. Our planes are increasing rapidly in numbers each week and the youth who wants to fly has a better chance than ever of being accepted because of the instruction given and experience gained, together with the backing of the Air Training Corps (which is officially recognised by the Air Ministry). The first Squadron of the old Air Defence Cadet Corps was inaugurated three years ago in the library at Sir Lindsay Everard's home. From that meeting England's first Air Defence Cadet Corps Squadron was formed at Leicester. This has now become No. 1 Founder (City of Leicester) Squadron Air Training Corps. The enthusiasm in the cause is spreading rapidly all over the Country—in fourteen days from February 1st 75,000 Cadets have enrolled—and ere this appears in print no doubt the number will have totalled 200,000, which clearly shows that given the opportunity our boys are not wanting in the spirit of service. The R.A.F. need have no fear that they cannot have the pick of young men from this Training Corps because the training will bring out and prove for certain that the young men they require will have the right sort of spirit and they in return, while being trained, will have impressed on their minds the picture of a Spitfire or a Wellington waiting for them. The lessons set out in this book were in use at this Training Centre at the beginning of the war, and because such good results were obtained, I wish to bring before Morse Code Instructors of the many Air Training Corps which are being formed all over the Country. a revolutionary method of instruction in the Morse Code. Such a method is now in use at the Air Training Corps Initial Training Centre.

A. W. ELEY,
Ex R.N.V.R. Wireless Telegraphy
Flying Officer R.A.F.V.R. Training Branch
Attached to Air Training Corps
January, 1943

INTERNATIONAL MORSE CODE

T	—	W	• — —
M	— —	J	• — — —
O	— — —	P	• — — •
E	•	R	• — •
I	• •	L	• — • •
S	• • •	F	• • — •
H	• • • •	K	— • —
A	• —	C	— • — •
U	• • —	G	— — •
V	• • • —	Q	— — • —
N	— •	Y	— • — —
D	— • •	X	— • • —
B	— • • •	Z	— — • •

1	• — — — —	1	• —
2	• • — — —	2	• • —
3	• • • — —	3	• • • —
4	• • • • —	4	• • • • —
5	• • • • •	5	• • • • •
6	— • • • •	6	— • • • •
7	— — • • •	7	— • • •
8	— — — • •	8	— • •
9	— — — — •	9	— •
0	— — — — —	0	—

ABBREVIATED NUMERALS
FOR CHECKING PURPOSES

FOR USE OF HOME GUARD

1 is checked as A
2 is checked as U
3 is checked as V
4 is checked as 4
5 is checked as E
6 is checked as 6
7 is checked as B
8 is checked as D
9 is checked as N
0 is checked as T

e.g. 85 is checked DE
96 is checked N6

When calling back any of the Code groups given in the Exercises contained in this Manual the PHONETIC ALPHABET should be used which is employed in all the three fighting services where Radio Telephony is used. This is necessary to identify any letter of the alphabet, and standard phonetic words are shown as follows :—

A	Ack	J	Johnnie	S	Sugar
B	Beer	K	King	T	Toc
C	Charlie	L	London	U	Uncle
D	Don	M	Monkey	V	Vic
E	Edward	N	Nuts	W	William
F	Freddie	O	Orange	X	X-ray
G	George	P	Pip	Y	Yorker
H	Harry	Q	Queen	Z	Zebra
I	Ink	R	Robert	Numeral Θ	Zero

Example :—

TMO will be spoken Toc Monkey Orange
EISH ,, ,, ,, Edward Ink Sugar Harry

PHONETIC ALPHABET
as used by Inter-Services

A	Able	J	Jig	S	Sugar
B	Baker	K	King	T	Tare
C	Charlie	L	Love	U	Uncle
D	Dog	M	Mike	V	Victor
E	Easy	N	Nan	W	William
F	Fox	O	Oboe	X	X-Ray
G	George	P	Peter	Y	Yoke
H	How	Q	Queen	Z	Zebra
I	Item	R	Roger	Numeral Θ	Zero

Example :—

TMO will be spoken Tare Mike Oboe
EISH ,, ,, ,, Easy Item Sugar How

The student should first of all obtain an ordinary buzzer together with a dry battery and a transmitting key.

Fig No. 1 gives a simple code practice circuit comprising all these units. Fig. 2. shows a circuit, both schematic and pictorial, by which phones can be used in conjunction with a buzzer. By connecting other phones and keys in parallel it is possible for several persons to practice at the same time. The ·5 m.f. fixed condenser is inserted to keep the key clicks out of the phones.

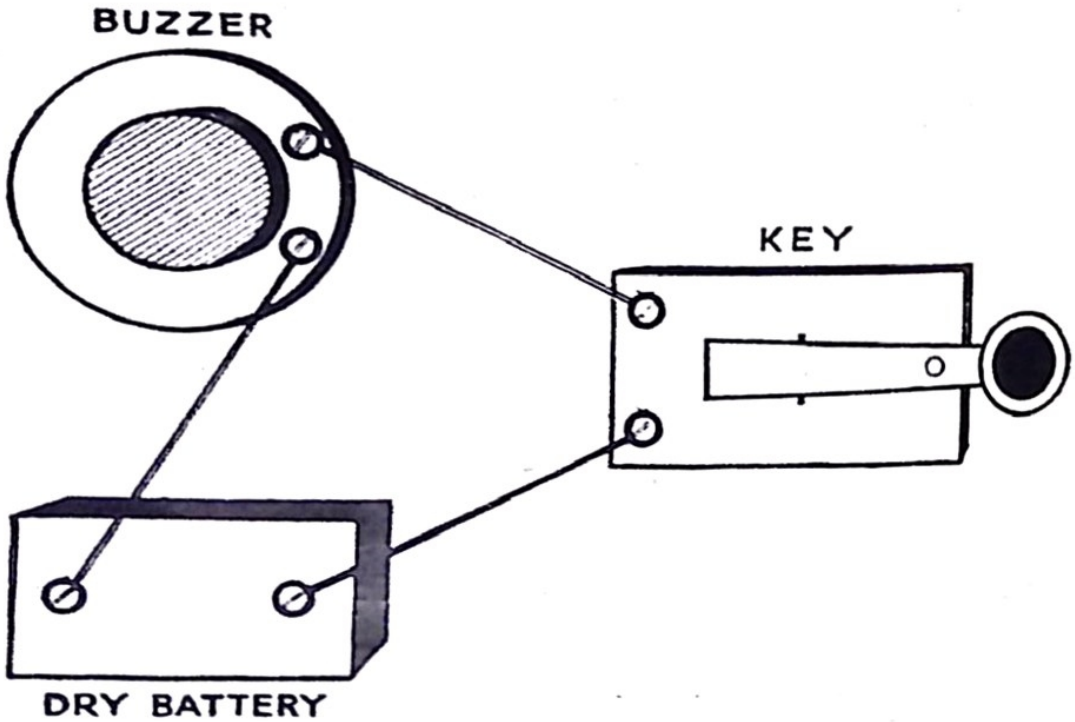
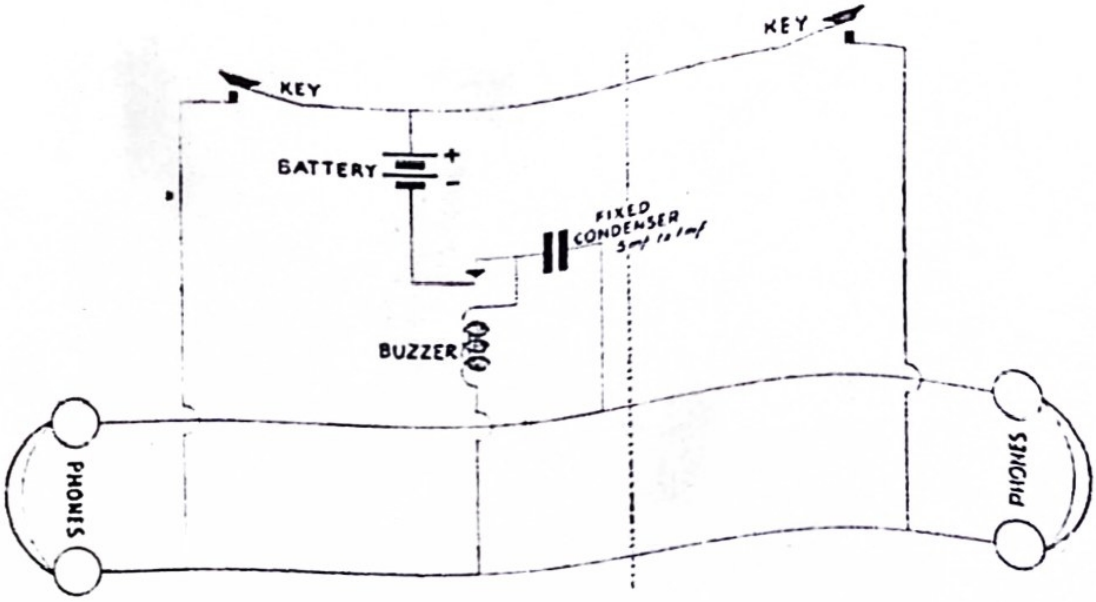


FIG. 1

If the student wishes he can construct with little trouble or expense a valve oscillator containing a 3 electrode 4 pin valve —the filament rated according to voltage of battery used—a valve holder, a low frequency transformer, a dry battery (see filament rating above), transmitting key and a pair of phones, (see Fig. 3 which gives a circuit hook-up that the majority of students use—this is extremely satisfactory and economical). Fig. 4 illustrates the same circuit pictorially.

The transmitting key can be set by means of the set-screws until there is a gap of not more than $\frac{1}{16}$'' wide.


KEY
KEY
BATTERY
+
-
FIXED
CONDENSER
BUZZER
PHONES
PHONES

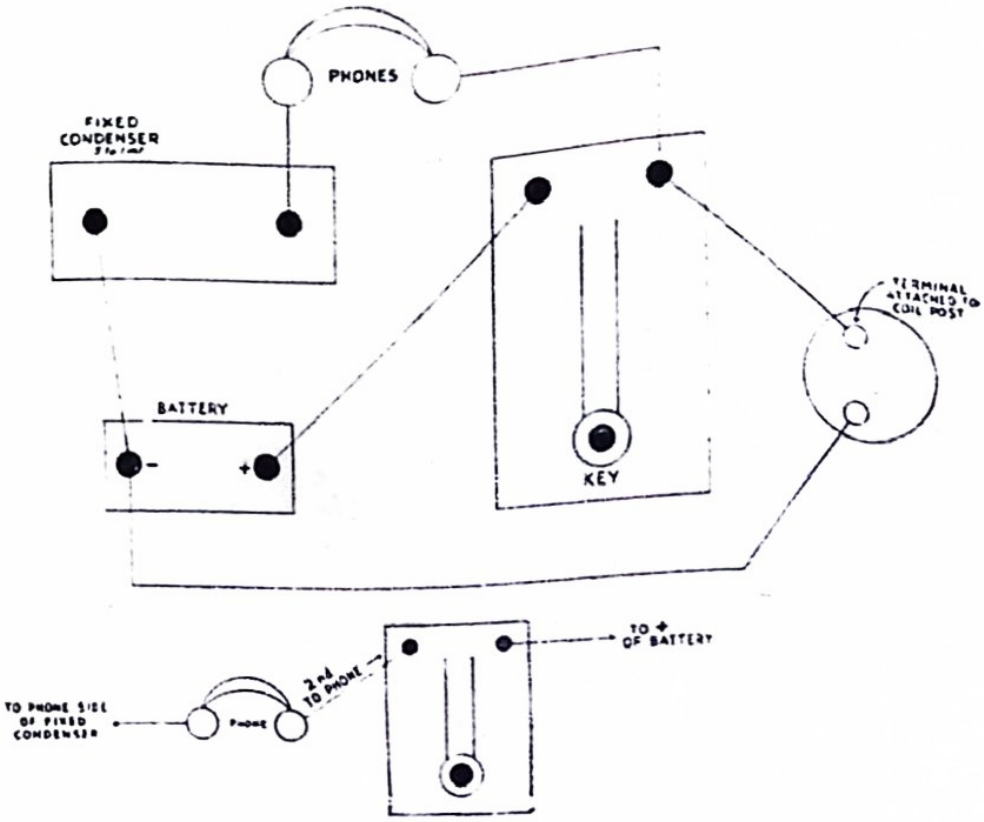
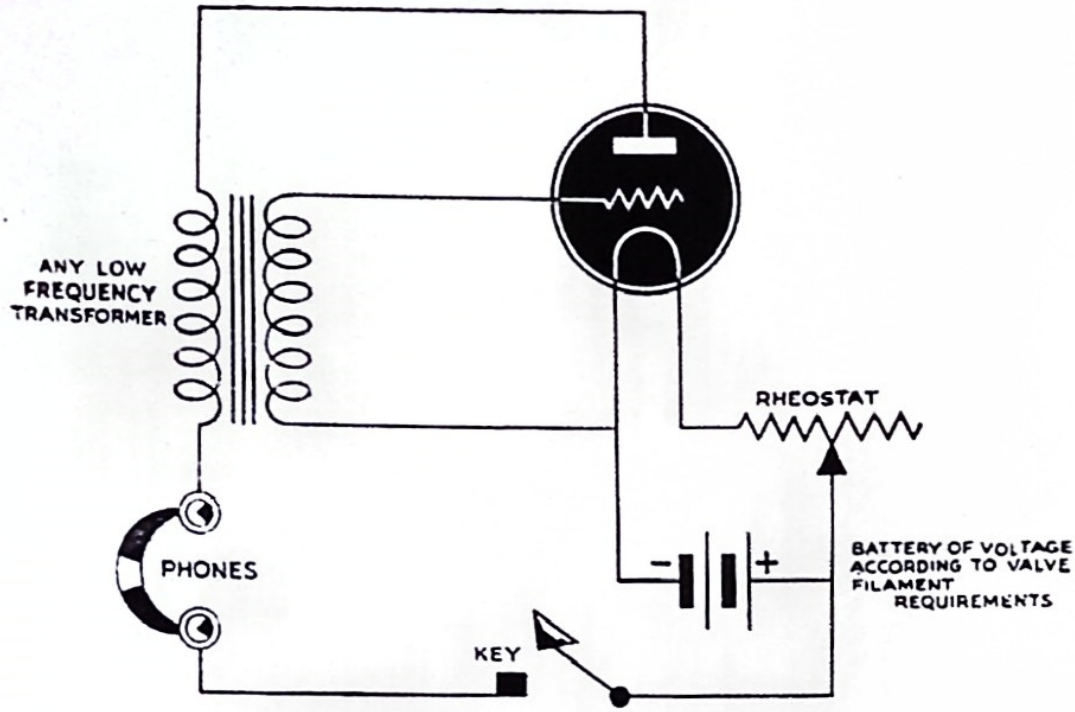
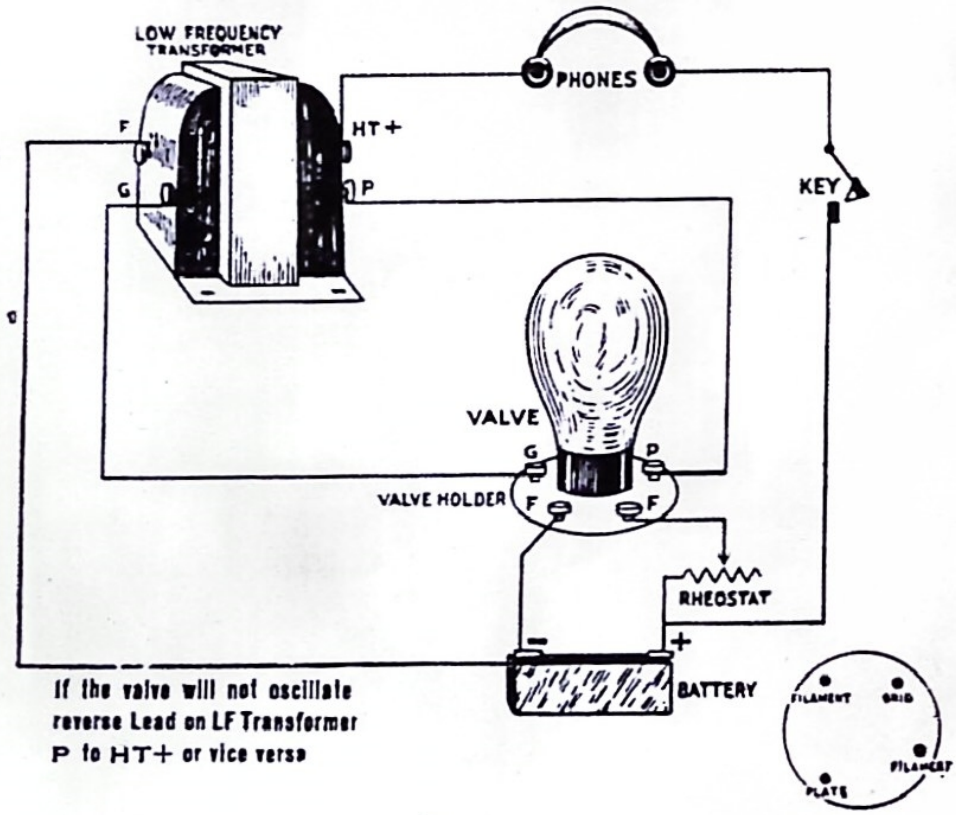

PHONES
FIXED
CONDENSER
TERMINAL
ATTACHED TO
COIL POST
BATTERY
-
+
KEY
TO +
OF BATTERY
2nd
TO PHONE
TO PHONE SIDE
OF FIXED
CONDENSER
PHONE

FIG. 2

FIG. 3

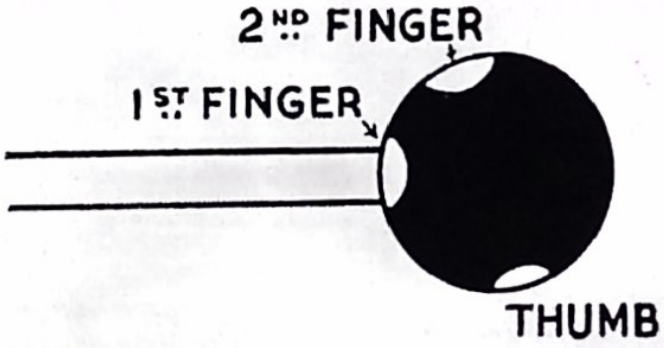


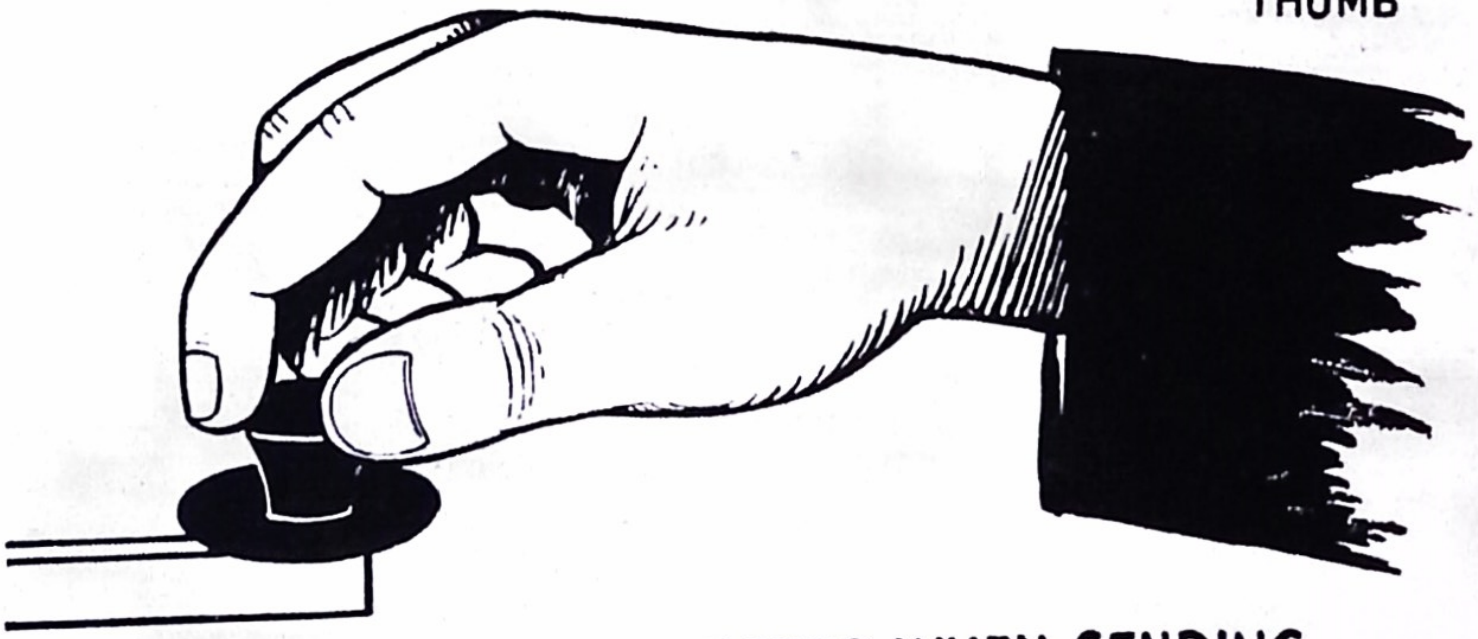


If the valve will not oscillate reverse Lead on LF Transformer P to HT+ or vice versa

FIG. 4

FIG. 5.





CORRECT POSITION OF HAND & FINGERS WHEN SENDING

FIG. 6.

A pleasing tone should be aimed at in the case of the buzzer set by adjusting the contact on the buzzer to change its tone; in the case of the oscillator the note obtained can be varied by inserting a rheostat in the positive battery lead to regulate the valve current.

To send code, place the key far enough back on the table to allow the whole arm from the elbow to rest comfortably on the table—lift the wrist slightly above the table—hold the knob of the key LIGHTLY, thumb on the left side, first finger on the top of the front edge, second finger on the right side positions as Fig. 6. Fig. 5 shows the top view of this. The third and little finger should be relaxed—make all motion from the wrist—DO NOT GRIP THE KNOB OF THE KEY—place both feet on the floor and sit straight in your chair. Keep the arm from the elbow and the body easy, never send with stiff body, never send with stiff arm; it is important that the sending motion *must come from the wrist.* The left hand should balance the body, the fingers resting on the side of the key base.

First make a dot or "dit." This is made as rapidly as you can make it. Now make a dash or "dah," this dash to be 3 times the length of a dot. The student should now make 3 dots and judge the time taken ; this will give the length of a dash and must always be made the same way whether transmitting at five or twenty-five words per minute.

Speed is determined by spacing between signals, between words or groups, never between parts of signals.

It is wrong when sending code to make short, medium and long dashes ("dahs") or slow, medium dots ("dits"), or to take the hand off the key when transmitting.

Endeavour to attain regularity of transmitting speed—never send one word spaced at 15 words per minute (w.p.m.) and then another word spaced at 10 w.p.m. or 20 w.p.m. because this puts a strain on the person who is trying to receive your transmission.

Every would-be operator wishes to have a good reputation in the wireless world as having a good sending 'fist,' therefore remember, the man at the other end of the radio circuit forms his opinion of your ability as an operator by the style of your sending, and is pleased to listen to the clean-cut sending of a good operator. You will realise the meaning of this statement as you progress in your studies because it is most tiring to decipher "sloppy" sending of letters and words scrambled together.

The exercises given in this Manual are arranged so to develop the students " timing sense " that he automatically spaces all the signals correctly and as the student's speed gradually increases he finds he will be able to send and read code without conscious effort.

The following chart gives the timing sense of the word "RADIO" at 4 different speeds.

5	words a minute :		R.....A.....D.....I.....O
10	,,	,,	R.....A.....D.....I.....O
15	,,	,,	R....A....D....I....O
20	,,	,,	R..A..D..I..O

SIGNALLING RULES.

A DASH (▬) is equal to Three Dots (ooo).
The space between parts of the same letter is equal to One Dot o●o The space between two letters is equal to Three Dots ●●ooo▬
I T

The space between two words is equal to Five Dots ;
(●● ▬ooooo●● ●●●)
I aT I S

LESSON I.

Practise making all "dash" letters first—the Morse Code letters being :—

Dah	T	—
Dah Dah	M	— —
Dah Dah Dah	O	— — —

Great care to be taken in the spacing between letters and between groups.

Three-Letter Code Groups

TMT	TOT	OTM	TOO	OOM	MTM	OMO	OTT
OTO	MMT	MOM	MOT	MTM	TTM	OOT	TMO
OMT	MTO	OMT	TMM	TTO	MMO	MOO	TTO

Four-Letter Code Groups

OMOT	MOTO	OMTT	TOMT	OTMT	MOTM
MTMT	MTMO	TOOM	OTOM	MTTM	TMTM
TOTM	MOTO	TOTO	OMTM	TMTO	MTOM
MOTT	MOMO	OMTT	TOMO	TOTO	TMOT

Write up a drill exercise of five-letter Code Groups. As you write down the letters, consider them as being composed of 'DAHS,' (the nearest phonetic equivalents to the sounds these symbols have when heard from your buzzer or oscillator)—say them mentally to yourself.

LESSON 2.

This exercise is for sending and receiving letters composed of all Dot letters.

Dit	E	•
D' Dit	I	• •
D' D' Dit	S	• • •
D' D' D' Dit	H	• • • •

Three-Letter Code Groups

EHE	EHS	SHE	SIH	ESI	HEH	ISI	IHI
HIH	SIS	IEI	ISE	HSI	ESE	EIE	SES
ISH	SEI	HSH	EIS	SIH	SIE	ESH	HEE
EIH	IEH	SEI	SIE	HIS	EIS	HSE	EEH

Four-Letter Code Groups

ISHE	SHEI	HEHE	HIHI	HESE	HISE
SEHS	SHEE	ISIS	HISI	ISES	EHIE
HISH	EIEI	SEHS	HISE	ISES	SEIS
HSEI	ISIS	EHIS	ESHE	HSIE	ESHI
SIES	EIEI	SEHI	HISH	SHEI	SHIS

Endeavour to send each group of "Dot" letters with rhythm, *i.e.*—correct spacing between letters and between groups.

Write up a drill exercise of five-letter Code Groups ; it is important to say them mentally as mentioned in Lesson 1.

LESSON 2 *(Continued)*

The following words have been selected for sending practice. They contain odd combinations of letters. If you make a mistake in any letter, make the error sign and send it immediately again until you can send the correct word without hesitation.

TO	IT	HE	SO	ME	EH	TE	OH

TIE	SEE	TOM	TEE	TOT	HOI	THE
HIM	HIS	TOO	MET	HOE	SET	TIE
HEM	SIT	TOE	HIT	EMS	HOT	SHE

SIST	SHOT	SHOE	SHEM	SOHO	STEM
EMIT	MOME	SEEM	MITE	HOSE	HISS
HOST	SITE	TIME	MEMO	MIST	MOOS
HOOT	HOME	SOME	TEST	THIS	SOOT
ITEM	TOES	MOOT	TOSS	THEM	MEET
MOTH	MOTE	TOOT	TOTS	METE	MOST
MOSS	HOOT	MISS	MISE	TOME	SHOO

MOIST	THEME	MOTTO	HOIST	THOSE
THESE	SHOOT	SHOES	SHEET	THEME
SMOTE	SMITE	SOOTH	TOTEM	TOOTH
TITHE	MITES	METES	MISTS	MOOSE
MOTET	SISOM	SMITT	STOOM	MOOTS
SHOTS	SMITH	MEETS	TEETH	TESTS

THEISM	THEIST	SIMOOM	SOMITE
SOOTHE	IMMESH	TIMIST	MISSES
THESIS	TMESIS	SEETHE	MISSES
MEIOSIS	MISSISH	MOHSITE	SOOTISH

SOMETIMES	THESMOTHETE	TOTEMISM

LESSON 3.

This lesson consists of the combination all-dot letters mixed with all-dash letters. You should try to send at least four groups without an error or pause.

NOTE :—Make the error sign every time you make a mistake

EIMST	IEMTS	OMSIT	TIHME	SETOI
EOEST	MESTI	EHOIM	MSETH	ITEMT
ISTOM	OSMIE	IHEMT	OIMSH	EMISI
TSEMO	EMHIT	HOHOI	TEMOS	IETSO
HOSMI	EHOMI	TESOI	EOHSI	ESOTI
IOSIE	ISHOE	IOSET	IMOHE	IMSOH
OSTEI	SOMET	IOHOH	TIHME	OMEST
ISIME	HSMOI	TMEHI	EIMSO	MOTIS
TMETI	HTESH	MIOHE	ITSEM	TSEOE
IOSES	EMHIT	TISMO	STMEM	STMIS
OSMIE	HOMIT	ESOIE	OHSIE	SOTEH
SEMOE	MHITH	OHOIT	EMOSI	ETSOS
STOMO	SMIEI	HEMTO	IMSHE	IMISI
OESIM	ESITE	MOIHM	ETIHM	HITEM
IMSTI	EMSTI	TMSIE	ISHES	SITOS
ISTEM	ITIME	MESEI	EMIES	SHEME

When the student can read and send the code groups he is by now convinced that he can learn the code and as he is now ready to send and receive simple English words, this will encourage him to become "code-minded."

NOTES ON LESSONS 1—3.

The student by now will have noticed that he has learned quickly the simple letters in lessons 1, 2 and 3. The speed in memorising the remaining letters of the alphabet may be slower in comparison, and before we turn to Lesson 4, he must now make a decision to *stick to* the learning of Morse or "sound language" through thick and thin in going all out to learn it. He must bring all his powers into action—making mental pictures on the canvas of his mind of winning through and finally, as a wireless operator, taking charge of a wireless station either on land, sea or in the air—dwelling on this idea at odd moments, directing all his thoughts to that end along the channel of his desire—starting off with the idea "I SHALL SUCCEED" and he will unconsciously bring it about that he will succeed because he is doing what is necessary to achieve that result.

The practice of **Auto-suggestion** is of invaluable assistance. In most, if not all studies, this mental process of storing-up impressions in the sub-conscious mind is employed with distinct advantage. An easy, but none the less sound, way of practising auto-suggestion for the purpose the student has in view, is the concentration of mental effort at times suitable to himself. One of these quiet times may be when he has gone to bed. Here with eyes closed and the attention rivetted on the sole objective, he will dwell on any Morse code symbols he must learn, repeating them mentally twelve to fifteen times in an even flow. Thus the symbols are made, as it were, to speak, but in attaining this, *the importance of rhythm must never be forgotten, "Dah D'Dah Dit C."* Here one will get the sound and the meaning of the letter—the impression to his sub-conscious mind, which will take over the task and, when called upon, perform it almost automatically ; this fact is based on certain laws which are constantly functioning.

LESSON 4.

D' Dah	A	• —
D' D' Dah	U	• • —
D' D' D' Dah	V	• • • —

Three-Letter Code Groups :

AUV	UVV	VAV	AVU	VUV	AAU	VUV	UUA	VAU
AVV	UVA	AUA	UAU	VAU	VVA	AUV	VUA	UAV
UAU	VVU	AVV	VUA	UUA	AUA	UVV	VUV	AUV

Four-Letter Code Groups:

AVUV	AUAU	VAVA	UUVA	UVAV
UAUA	UVUV	AUVU	UVAA	VAVU
AUAV	UAAU	UAUV	AUVA	AVAV
VAUV	UAVU	AVUA	AUUV	UVAU
VAUA	VUVA	AVAV	UVVA	VAAV

Exercise Containing Letters E I S H T M O A U V

AUTVA	EUTAH	UTMOA	UTAAT	OUSET	UATIV
IVEUT	AISHV	UIUES	SAMET	MEVIU	TAVAU
MAUVA	AIVIS	UAUEV	OVTUA	VAUAS	AVUAV
UEATS	UEAVS	MIVAS	SUAVS	VITES	AUOMI
SAUVS	HEOAV	VIVSU	AVAUE	IUISE	VIVAU
MISAV	OSTEA	MAVIU	OTESA	HVTAU	SEVUI

Do not turn to Lesson 5 until you can send and receive 95% correctly of the Exercise containing all letters listed above.

LESSON 5.

Dah Dit	N	— •
Dah D' Dit	D	— • •
Dah D' D' Dit	B	— • • •

Three-Letter Code Groups :

NBD	DBB	BNB	NBD	BDB	DBN
NND	BDB	DDN	NDB	BND	DDN
NBB	DNB	DBB	NBD	NDB	DND
DBN	NDN	BND	NBB	BDN	BBD
NDN	NBN	BBD	BBN	DNB	NBD

Four-Letter Code Groups :

NBNB	NDND	BNBN	DDBN	DBDB
DBDN	DBDB	NDBD	DBNN	BNBD
NDNB	DNND	DNDB	NDBN	NBNB
BNDB	DNBD	NBND	BDND	NBBD
DBNB	BDNN	NBDN	BNDN	DBND

Exercise Containing All Letters Learned.

INANE	DABEN	DIVON	TNIBE	ESIBN
VASBI	TONID	SHEDV	SEDON	OBDSI
ENABD	DBEBI	ISHND	OBIUD	NTODN
ADIBD	DANBU	ANDEB	MINAD	BADIV
ONESD	BIDEN	EDMNA	DASNB	SNEBT
ADTDS	ADNIN	HADNB	SMDBA	MIDOB

The student should endeavour to send five groups of the exercise without an error or pause, paying great attention or taking great care that the spacing is correct between letters and between groups.

LESSON 6.

D' Dah Dah	**W**	• — —
D' Dah Dah Dah	**J**	• — — —
D' Dah Dah Dit	**P**	• — — •

Three-Letter Code Groups.

WPJ	JPP	PWP	PJP	WWJ
JJW	PWJ	WJP	WPP	JWJ
JPJ	WJP	JWJ	WJW	JPW
PWJ	PJW	PPJ	JWW	WPW

Four-Letter Code Groups.

WPJP	WJWJ	PWPW	JJPW	JPWP
WJWP	JWWJ	JWJP	WJPW	WPWP
PWJP	JWPJ	WPWJ	PJWJ	WPPJ
JPWP	PJWW	WPJW	PWJW	JPWJ
PJPW	WPWP	WPJP	JPPW	PWWP

Exercise containing Letters Incorporated in Lessons 1 to 6

HEWSP	MIWOJ	SUEJT	BADIJ	NTOWJ
OBPSI	WIDJE	ESIBW	JABIP	SMWJA
MIWAP	OBIJD	SEJOP	TWIEP	DIJOP
SHEDJ	ISHJW	ANPEW	EJMPD	HAWNB
WISJP	JEPAW	WEPBJ	BOSVP	WEPJT
JASIB	IWATE	EWADP	EJIDB	ODBWS

The student should now go back and review the letters EISHTMOAUV until he is able to send all code groups smoothly and without more than one error at 6 words per minute (5 letters constitutes one word). The correct formation of letter characters and the correctness of spacing should be the chief aim, not speed.

LESSON 7.

D' Dah Dit	R	• — •
D' Dah D' Dit	L	• — • •
D' D' Dah Dit	F	• • — •

Three-Letter Code Groups.

LRR	FRL	RFR	RRF	FLR	FFL	RLR
LLF	RFF	FRR	LFL	LRL	LFL	RRL
LRF	FLF	RLF	RRL	FLL	FRF	RRF

Four-Letter Code Groups.

LRFR	LLRF	RFRF	FLFL	FLFR
FRFR	LFLF	LRLL	FLLF	LRFF
RFRL	FLFF	LFFL	LFLR	FRFF
RFLR	LFRL	FRFL	RLFL	FRRL
LRFR	RLFF	FRLF	RLRF	LRFL

Practice Exercise.

FAFHR	DALIN	RLFWE	LEFWI	DEWTW
TROLF	FIFAL	FRFIL	SBRTW	NRWTJ
SFOWH	IRELT	SBLWJ	JBAFR	BSJWU
JAMBR	WIENH	IJFWS	RWJBF	FRWJL
REROH	RASIB	JOLIR	TRILF	ITEMF
LFRMB	FLRRF	JBRLF	NRWFL	RARLN

This practice Exercise is not an easy one. Whenever you fail to copy a letter when receiving any message under instruction, do not feel annoyed at this no matter how many times it occurs but move your pencil over and go right ahead and copy the next letter, as such will give you practice in "missing," which is important.

LESSON 8.

The following are provided as practice in sending simple sentences covering all letters in lessons 1 to 7, *i.e.*:—

E I S H T M O A U V N D B W J P R L F

Better a diamond with a flaw than a pebble without one. *Ch.Pr.*

When one turns over in bed, it is time to turn out. *Wellington.*

Beware of the man who will not be bothered with details.

No man is free who is not lord over himself. *Goethe.*

Wherever the truth is injured, defend it. *Emerson.*

It is just as important to be honest with ourselves as honest with others.

Old shoes are easiest. *Pr.*

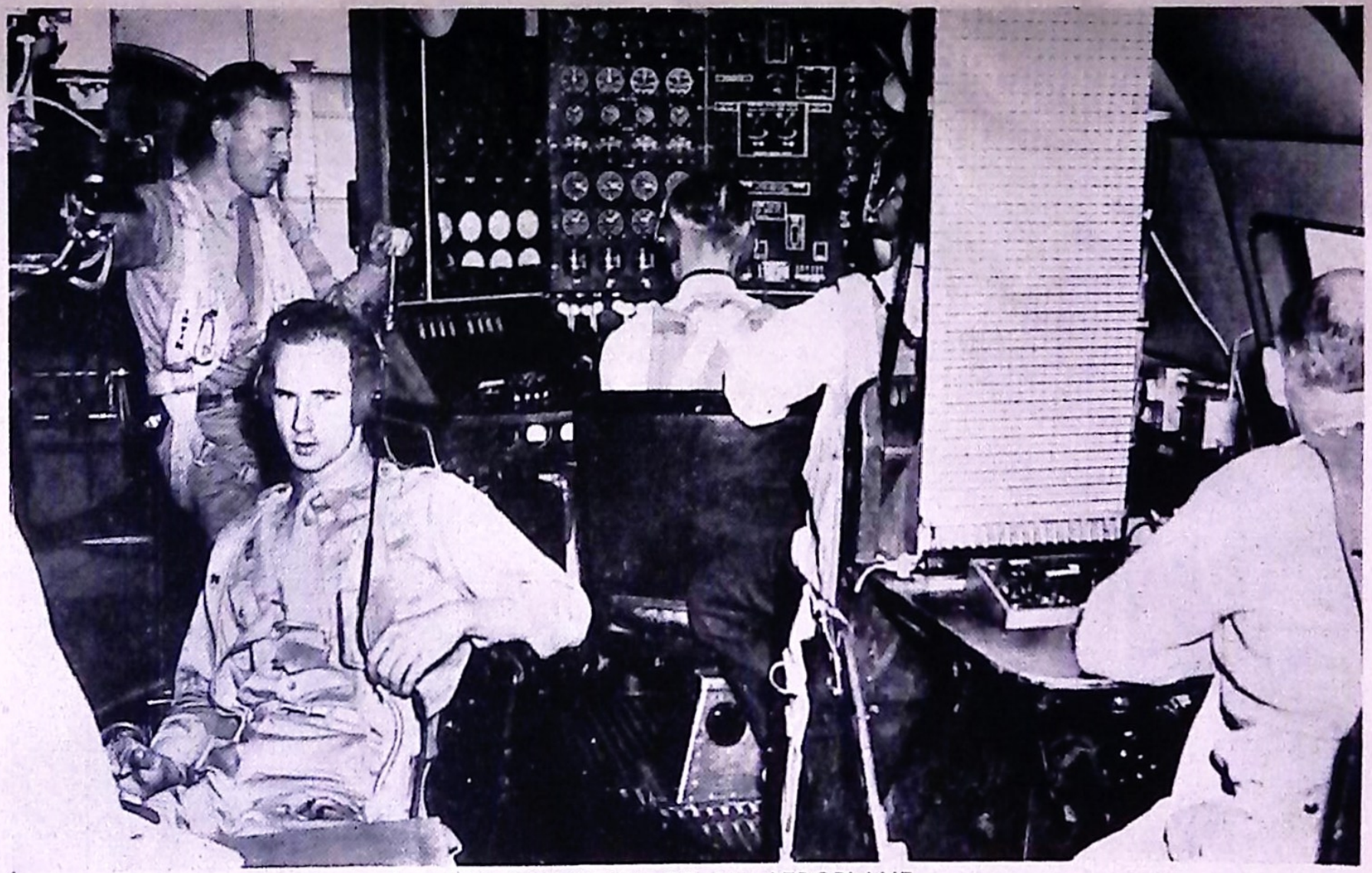
The mind of a man is the man. *Motto.*

He that would reap well must sow well. *Pr.*

Men of sense often learn from their enemies. *Aristophanes.*

TECHNICAL TRAINING OF THE R.A.F.

A general view showing aircraftmen undergoing Morse instruction at an R.A.F. Station.



THE "BRAINS" OF AN AEROPLANE.

View inside of a plane showing radio and control panel which with the pilot's instrument panel comprise the "brains" of this flying battleship.

LESSON 9.

Dah D' Dah	K	— • —
Dah D' Dah Dit	C	— • — •
Dah Dah Dit	G	— — •

Three-Letter Code Groups.

KGC	CGG	GKG	GCG	KKC	CCK	GCK
GKC	KCG	KGG	CKC	CGC	CGK	KCK
GGC	KGK	GGK	CKG	CGG	KGG	GGC

Four-Letter Code Groups.

GKKG	CGKC	KGGC	KGKG	GKGC
CGKG	CCGK	CGKK	KGGK	GCKG
GKCK	CGGK	KGCG	KGKC	KGCK
KGCG	GCKK	CKGC	CKKC	CGCG
KCKC	GCGK	CGKG	GKCG	KCKG

Practice Exercise.

TKCKG	FLUFG	GFKRG	KUART	CVKCL
CEGIK	GURKE	CRUFE	LFURG	LOGUK
FLKGC	LOGOK	GVGKU	KURFK	RFVUK
LKFGC	GKLRF	KUKUE	CGKRU	RVCLF
GVKLR	KURIG	GUGGK	VOTSG	KUOGK
KUACG	GKVUC	KFCKL	RGFKV	GRUKC
KLGCK	CLGKF	CFLGR	KGIKC	RVKCF

Particular attention should be paid to the sending of the letter "C" this letter can be sent to sound as KE as NN or TR—practise sending this letter so that there is no confusing it with those combinations of letters.

LESSON 10.

Dah Dah D' Dah	Q	— — • —
Dah D' Dah Dah	Y	— • — —
Dah D' D' Dah	X	— • • —
Dah Dah D' Dit	Z	— — • •

Three-Letter Code Groups.

QXZ	YXX	XQZ	QXY	XYX	YXZ
QQY	XYQ	YYQ	YYZ	XQX	QYX
QXX	YQY	YXY	QYZ	YQZ	YXQ

Four Letter Code Groups.

QXYZ	QZYX	QYQY	XQXQ	YYXQ
YXQZ	YQYZ	YXYX	QYXY	YXZQ
XQXY	QYQZ	YQQY	YQXZ	QXQX
XQYQ	YQXY	QXXY	ZZYY	YZXQ

Practice Exercise.

QOQOQ	YOYOP	QUCHT	ZADNY	SGYEH	JAWYZ
XLFRX	ZOXSH	FETYQ	HETOP	FLUQX	ZEXIZ
CRYQG	YESTY	XONIC	ZUZPC	GWJBZ	PLAZR
PURXC	XAXXA	XINPS	WAZIW	ISYGL	YILOX
DALQP	JAZIJ	TOPIG	XTZEX	BJKRU	QTYIX
WAXIU	BUXIZ	SHXYZ	CEZIG	FZRVQ	GIRFL
TCMGQ	QGFLX	GVGZX	QYTXZ	YYPFF	QLYTM

LESSON 11

Exercise in Unusual and Difficult Words

ZINGIBERACEOUS	ZOOPHYTOLOGICAL
ZOROASTRIANISM	TRISOCTAHEDRON
XYLOBALSAMUM	TRIPINNATIFID
XANTHOCHROVUS	TINTINNABULATION
WITENAGEMOT	THAUMATURGICAL
WHIZZINGLY	TETRABRANCHIATE
TEREBINTHINE	THALAMIFLORAL
SYNECPHONESIS	SCHORLACEOUS
QUINQUEPARTITE	QUADRIDIGITATE
PYROXYLIC	PORPHYRITIC
POLYCOTYLEDONOUS	PODOPHYLLIN
PLECTOGNATHOUS	PERIPATETICISM
PERENNIBRANCHIATE	ORNITHICHNITE
MONOCHLAMYDEOUS	METEMPIRICISM
LEPIDODENDRON	INFUNDIBULIFORM
INEFFICACIOUSNESS	QUADRUPEDAL
IMPROVVISATORI	ICHTHYOPHAGOUS
PRESTIDIGITATOR	GYRENCEPHALATE
ZYGODACTYLOUS	ECHINODERMATA
XANTHIPPE	ZIGZAGGED
VERTEBRATA	UNWARRANTABLENESS
MOLLUSCOID	THEOPHILANTHROPISM
LONGITUDINAL	MONOCOTYLEDONOUS

After all the letters in the alphabet have been memorised take a newspaper and go through the copy, saying to yourself aloud the phonetic combinations of the code letter characters such as "dit" for a dot and "dah" for a dash holding the note "dah" so that it lasts 3 times the length of a "dit."

LESSON 12.

D'Dah Dah Dah Dah	1	• — — — —
D' D' Dah Dah Dah	2	• • — — —
D' D' D' Dah Dah	3	• • • — —
D' D' D' D' Dah	4	• • • • —
D' D' D' D' Dit	5	• • • • •

Practice Exercise Groups containing Numerals 1 2 3 4 5

21345	43125	43215	25134	35214	53124
12435	34215	34125	52314	32541	21543
14253	32451	31452	53241	24315	42351
41523	34251	13542	35421	42135	41352
45132	23514	15324	43152	14523	24153
54312	32154	12534	41325	15432	51324
53421	31245	21354	14235	51342	12453
35241	32145	23145	42153	53124	24531
32514	23415	32415	24513	35214	14532
23514	24351	34251	25431	32541	42513
32154	42531	43521	52341	23451	15234
31245	45213	45312	53214	24315	14235
13425	51432	54132	35124	42135	25413
14352	15342	15243	31542	41253	15423
41532	13524	51243	13452	14523	45231
12345	45123	31254	52134	14325	12543
13254	54213	31524	25314	41235	43152
31524	52431	31452	23541	42315	52143
35142	25341	13542	32451	24135	52134
53412	25314	51234	34512	21453	54321

LESSON 13

Dah D' D' D' Dit	6	— • • • •
Dah Dah D' D' Dit	7	— — • • •
Dah Dah Dah D' Dit	8	— — — • •
Dah Dah Dah Dah Dit	9	— — — — •
Dah Dah Dah Dah Dah	0	— — — — —

Practice Exercise Groups containing Numerals 6 7 8 9 0

97068	89067	90687	09768	97860	06870
79608	80976	96078	90678	98067	68700
76980	68796	69708	90768	80967	07860
67890	67869	67980	09678	89076	70680
76890	70689	76890	06987	98076	86908
68790	76098	78609	60879	90786	96807
86970	67908	87069	68097	09876	07806
89607	69780	80796	86907	08967	08076
98067	96870	08976	89670	80697	60890
90876	98607	09867	98760	86079	08760
09786	89067	90678	97806	68709	06980
67968	80976	96087	79086	86097	09090
70698	98706	69807	70968	80679	90909
76089	97860	68970	07698	08769	86068
67809	79680	86790	06789	07896	60706
76809	76908	87609	60789	70968	07070
78690	67089	78069	67098	97608	70907
87960	60798	70896	76908	97086	00700
70807	89706	06978	07986	79680	60978
		98076	09687		

LESSON 14

Practice Exercise containing All the Ten Numerals

123456	536142	462513	213465	451623
132546	563412	426153	124356	546132
315264	654321	241635	142536	564312
351624	645231	214365	415263	653421

1234567	5371624	6745231	2416375
1325476	5736142	6472513	2143657
3152746	7563412	4627153	1234576
3517264	7654321	4261735	1325467

12345678	53718264	87654321	46281735
13254768	57381624	86745231	42618375
31527486	75836142	68472513	24163857
35172846	78563412	64827153	21436587

123456789	132546897	536192748	695738142
132547698	315264987	563917284	956371824
315264789	351629478	659371824	593617284

1234567890	01020	0787	70343	0987654321
1325476980	19750	6556	34408	0896745231
3152749608	23504	9805	56809	8069472513
3517294068	36815	3432	56810	8604927153
5371920486	40206	8041	65809	6840291735
5739102846	59070	6655	70807	6482019375
7593018264	60087	4124	80641	4628103957
7950381624	78043	0875	68005	4261830597
9705836142	80700	5680	54343	2416385079
9078563412	00098	6580	31231	2143658709

LESSON 15

Practice Exercise containing Letters and Figures

WX9AD

KNH28	7HiA9	SDYP8	JVN3V	oR25P
HGJ7o	CZGY4	68LWP	HJ4AC	AA675
WB6MS	QXY45	W2XLA	HKV12	77oPX
WP7H5	W3KAX	W9XFB	ZR6BZ	ZBW34
7S2KS	WX495	SYB5H	HCJC9	59RV6
JMK4G	MJ6GB	BZ99F	5QYZL	66ANX
YBR3Z	KNJ73	CoC22	P15ZH	HCJB9
XWF7L	WEY44	PRA76	C92P7	WBZ5B
AVK69	54ZYL	YV6U3	HH25M	GBDK5

NOTE:— The figure "0" (Nought) is to be signalled as "T" when occurring in the text of a figure cypher or code message or for checking purposes. In all other cases, such as Time of origin, Time of receipt, originator's Reference Number and Dates, procedure messages, etc., it is to be signalled in full. To differentiate between the figures 0 and 1 and the letters O and I in cypher groups they are written thus :—

Figure 1—1 Letter I—i
Figure 0—Θ Letter O—o

Cypher Exercise including Barred Letters B C P see Reference page 46)

B75JM	29X1P̄	YU728	Θ6G6N	Z1E2N	3A4N5
AM654	7MU4E	ND695	68A9K	C734A	A5962
A1L2G	3B4RA	UN154	X8P69	MAB̄56	6AMAX
MDC̄9C	XV1P̄P	LE796	69LHo	NS̄C9X	9K5B6
XVN2K	5JB2E	YZ53Θ	69P̄QV	EJX27	67BBL
JiΘHF	76PRR	ΘK123	T99MM	LiK1J	9NERU
968ZN	N35UU	GZA9N	69BGH	AHVL3	iN3B3
2UN4G	G23RQ	U3WQ3	12C̄AB̄	CYXWV	98ZXP

CONVENTIONAL AND PUNCTUATION SIGNALS

		SYMBOL	REMARKS
PERIOD	.	AAA ·—·—·—	
COMMA	,	GW —— ·· ——	OR III ·· ·· ··
SEMICOLON	;	CN —·—·—·	
INTERROGATION	?	IMI ·· —— ··	
HYPHEN OR DASH	—	DU —·····—	
APOSTROPHE	'	WG ·————·	
INVERTED COMMAS	" "	RR ·—··—·	
BRACKETS	( ) OR [ ]	KK —·——·—	
COLON	:	OS ——···	
FRACTION BAR	/	XE —··—·	
UNDERLINE OR BLOCK LETTERS		UK ··——·—	
ERROR		8 E^{S} ·····	
NUMERAL SIGN		FI ··—···	FIGURES INTENDED. ·FI· ALSO USED FOR DECIMAL POINT IN A NUMERAL GROUP.
" "		FF ··—···—·	FIGURES FINISHED.
"ALL AFTER"		AA ·—·—	USED IN CONNECTION WITH REPETITIONS & CORRECTIONS
"ALL BEFORE"		AB ·——···	
"WORD OR GROUP AFTER"		WA ·——·—	
" " BEFORE		WB ·———···	
DOUBLE DASH OR BREAK SIGN		DA —···—	Also called LONG BREAK
DISTRESS CALL		SOS ···———···	
ATTENTION CALL		KA —·—·—	PRECEDES EVERY TRANSMISSION
GENERAL ENQUIRY		C Q —·—· ——·—	2 LETTERS
ENDING SIGN		AR ·—·—·	END OF EACH MESSAGE
WAIT		AS ·—···	or Q ——•—
END OF MESSAGE		VA ···—·—	TRANSMISSION FINISHED

LESSON 16

PRACTICE IN SIGNS USED IN MORSE CODE

THE PERIOD, Full Stop (.) $\overline{\text{AAA}}$ ● — ● — ● —

Written in Message O *Also used as a Break Signal immediately preceding the text in a plain language (PL) written message.*

Both the Period and Comma punctuation signs were revised in accordance with the International Radio Regulations, Cairo 1938 Also used in procedure as a signal preceding the text, in a plain language written message.

All greatness is born of ambition.

Let the ambition be a noble and honourable one.

Time once past never returns.

The traveller began his journey in the highest spirits and with the most delightful anticipations.

Joy is too brilliant a thing to be confined within one's own self.

Let us bless and hallow our dwellings as the homes of freedom.

The changes of the year impart a colour and character to our thoughts and feelings.

Exercise and temperance strengthen the constitution.

Long experience made him sage.

Pursuit of knowledge may be under great difficulties.

The Morse Code is a subject interesting alike to the old and to the young.

Cheerfulness keeps up a kind of daylight in the mind.

His was a soul replete with every noble quality.

Talents without application are no security for progress in learning.

The old Period sign (Madrid 1932 Radio Communication Conference), is used as a Comma by the R.A.F. III ●● ●● ●●

LESSON 17

THE COMMA (,) $\overline{GW}$ — — • • — —

Diligence, industry and proper improvement of time, are material duties of the young.

He is generous, just, charitable and humane.

Wisdom is the associate of justice. It assists her to form equal laws, to pursue right measures, to correct power, to protect weakness, and to unite individuals in a common interest and general welfare.

Assemble in your parishes, villages and hamlets. Resolve, petition, address.

I have roamed through the world, to find hearts nowhere warmer than those of England, soldiers nowhere braver, patriots nowhere purer, wives and mothers nowhere truer, maidens nowhere lovelier, green valleys and bright rivers nowhere greener or brighter, and I will not be silent, when I hear her patriotism or her truth questioned, with as much as a whisper of detraction.

This monument is a plain shaft. It bears no inscription fronting the rising sun, from which the future antiquarian shall wipe the dust. Nor does the rising sun cause tones of music to issue from its summit. But at the rising of the sun, and at the setting of the sun, in the blaze of noon, and beneath the milder effulgence of lunar light, it speaks, it acts, to the full comprehension of every British mind, and the awakening of glowing enthusiasm in every British heart.

Birth, rank, wealth, learning, are advantages of slight value, if unaccompanied by personal worth.

LESSON 18

THE NOTE OF INTERROGATION, (?) $\overline{\text{IMI}}$ ●● — — ●●

Also used as request for repetition of a transmission not understood.

METHOD OF ASKING FOR REPETITIONS:

REPEAT ALL AFTER ... ... $\overline{\text{IMI}}$ **AA**

REPEAT WORD AFTER... ... $\overline{\text{IMI}}$ **WA**

REPEAT FROM.....TO..... $\overline{\text{IMI}}$ ..... TO .....

REPEAT ALL BEFORE ... ... $\overline{\text{IMI}}$ **AB**

REPEAT WORD BEFORE ... $\overline{\text{IMI}}$ **WB**

SEPARATIVE SIGN SIGNAL **II** ●● ●● Called in R.A.F. SHORT BREAK

Use Separative Signal after every 5 letter code or cypher group. Code may consist of pronouncable words or groups for the purpose of representing sentences of plain language (PL), i.e. ODEON. Cypher is usually written in groups of 5 letters as CZFRQ, 5 figures as 91537, or a combination of both letters and figures as N6AX8 to form a secret representatation of plain language. Plain Language (PL) Message is always taken down in longhand. Groups of letters or cypher are taken down in BLOCK CAPITALS.

Exercise in Separative Signal.

$\overline{\text{VE}}$ $\overline{\text{VE}}$ T●● ●● B●● ●● 24●● ●● T●● ●●

TEMOS DE BAMBO $\overline{\text{BT}}$ Y4●●●● 28●●●● GR33●●:●●

AUTVA ●● ●● (Repeat after every group of the following)

EUTAH	RARLN	HISEZ	EUTAH	CFLGR	VITUA
JONID	KGIKC	SEVAB	OBIUD	RVKCZ	BAZIB
FIFRR	XAYAG	AJVIA	NRWNL	QLYTM	UTMAO
WEPBJ	PLAXQ	DBEBT	BUSVP	XLFRR	ZADYN

01230 HRS $\overline{\text{BT}}$ 0845 ●● ●● 0838 $\overline{\text{AR}}$

LESSON 19

THE COLON (:) $\overline{\text{OS}}$ — — — •••

There is no mortal truly wise and restless at the same time: wisdom is the repose of the mind.

Law and order are forgotten : violence is abroad : the golden cords of society are loosed.

Do not flatter yourself with the hope of perfect happiness : there is no such thing in the world.

A bee among the flowers in spring is one of the most cheerful objects that can be looked upon. Its life appears to be enjoyment : so busy and so pleased : yet it is only a specimen of insect life, with which, by reason of it being half-domesticated, we happen to be acquainted.

Blue wreaths of smoke ascend through the trees, and betray the half-hidden cottage : the eye contemplates well-thatched ricks, and barns bursting with plenty : the peasant laughs at the approach of winter.

As we perceive the shadow to have moved along the dial, but did not perceive its moving : and it appears that the grass has grown, though nobody ever saw it grow : so the advance we make in knowledge, as they consist of such minute steps, are perceivable only by the distance gone over.

Such is the dealing of all on earth : so flourishes and fades majestic man.

LESSON 20

THE APOSTROPHE (') $\overline{WG}$ • — — — — •

I've seen the Moon gild the mountain's brow ; I've watched the mist o'er the river stealing ; but ne'er did I feel in my breast, till now, so deep, so calm, and so holy a feeling ; 'tis soft as the thrill which memory throws athwart the soul in the hour of repose.

INVERTED COMMAS (" ") $\overline{RR}$ • — •• — •

Banished from Rome? "what's banished," but set free from the daily contact of the things I loathe ? "Tried and convicted traitor"—who says this ? Who'll prove it, at his peril, on my head ? "Banished ?"—I thank for't. It breaks my chain ! I held some slack allegiance till this hour—but now my sword's my own.

PARENTHESES OR BRACKETS ( ) $\overline{KK}$ — • — — • —

My father and my Uncle Toby (clever soul) were sitting by the fire with Dr. Bray ; and Corporal Trim (a brave and honest fellow) was reading a letter to them.

I know the banker I deal with, or the physician I usually call in ("There is no need," cried Dr. SLOP (waking) "to call in any physician in this case"), to be neither of them men of much religion.

LESSON 21

THE SEMI-COLON (;) $\overline{\text{CN}}$ ▬ ● ▬ ● ▬ ●

This monument will speak of patriotism and courage ; of civil and religious liberty ; of free government ; of the moral improvement and elevation of mankind ; and of the immortal memory of those who, with heroic devotion, have sacrificed their lives for their country.

A white house peeps through the trees ; cattle stand cooling in the pool ; the casement of the house is covered with jessamine and honeysuckle ; the stately greenhouse exhales the perfume of summer climates.

Condescend to the weaknesses and infirmities of your fellow creatures ; cover their frailties ; relieve their wants ; rejoice in their prosperity ; compassionate their distress ; receive their friendship ; overlook their unkindness ; forgive their malice ; be a servant of servants ; and condescend to do the lowest offices of mankind.

When the fair moon, refulgent lamp of night, o'er heaven's clear azure spreads her sacred light ; when not a breath disturbs the deep serene ; and not a cloud o'ercasts the solemn scene ; around her throne the vivid planets roll, and stars unnumbered gild the glowing pole ; o'er the dark trees a yellower verdure shed, and tip with silver every mountain head ; then shine the vales, the rocks in prospect rise ; a flood of glory bursts from all the skies ; the conscious swains, rejoicing in the sight, eye the vault, and bless the useful light.

It is not therefore, the use of the innocent amusements of life which is dangerous, but the abuse of them ; it is not when they are occasionally, but when they are constantly pursued, when the love of amusement degenerates into a passion ; and when, from being an occasional indulgence, it becomes a habitual desire.

LESSON 22

THE HYPHEN (-) DU — • • • • —

semi-circle
to-morrow
snow-clad
over-canopied
gray-green
high-gleaming
blue-trousered
kerosine-case
newly-opened
self-denial
all-wave
fast-swimming
oscillator-mixer
so-called
capacity-operated
self-reliance
full-wave
infra-red
power-supply
electrically-operated
self-container
band-switching
noise-free
battery-operated
band-spreading
low-impedance
send-receive
non-resonant
high-efficiency
multi-grid
plate-grid
all-purpose

thunder-cloud
well-founded
clay-cold
evil-hardened
moss-stains
noon-day
strained-faced
two-by-four
half-cooked
lock-up
pipe-liner
cathode-ray
motor-boat
hard-to-find
high-pitched
plug-in
road-finishing
double-double
resistance-coupled
feed-back
short-circuit
short-waves
oxide-rectifier
ultra-highs
antennae-scope
two-toned
build-it-yourself
wire-wound
high-frequency-characteristic
selectivity-regeneration
never-to-be-forgotten
up-to-the-minute

all-wise
plane-trees
storm-clouds
ill-regarded
fellow-creature
home-fete
window-gaze
slow-moving
much-prized
tuning-fork
low-cost
fast-flying
double-throw
high-pitched
world-wide
heat-rays
up-to-date
photo-electric
power-supply
single-ended
present-day
well-trained
ultra-highs
fool-proof
heavy-duty
dual-purpose
self-vibration
non-inductive

LESSON 23

Exercise in using Punctuation Marks.

The duty of man in the management of his worldly affairs, must let it clearly be seen that he pursues his worldly calling from a principle of duty, not from a sordid love of gain. He must, therefore, not only " provide things honest in the sight of all men ; " not only avoid everything which is fraudulent and unjust in his dealings with others ; not only openly protest against those iniquitous practices which the custom of trade too frequently countenances and approves ;—but, also, he must " let his moderation be known to all men." He must not push his gains with seeming eagerness, even to the utmost *LAWFUL* extent. He must exercise forbearance. He must sometimes even forego advantages, (which, in themselves, he might innocently take), lest he should seem to give any ground for suspecting that his heart is secretly set upon these things. He must avoid everything which may look like moroseness and gloom. He must cultivate a cheerfulness of spirit.

He must endeavour to show, in his whole deportment, contentment and tranquillity. The spirit which in man is required to show itself, can be acquired in the exercises of humility, of meekness, of gentleness ; in a patient bearing of injuries ; in a uniform endeavour to overcome evil with good ; in self-denial : in universal kindness and courtesy; in slowness to wrath; in an unwillingness to hear or to speak evil of others ; in a forwardness to defend, to advise, and to assist them : by doing these things he will be discharging in a faithful, diligent way the personal and particular duties of his station. As a member of society, he must be distinguished by blameless and inoffensive conduct ; by simplicity and an ingenuousness of character ; by uprightness and fidelity in all his engagements.

As a neighbour, he must be kind, friendly and accommodating. His discourse must be mild and instructive. He must labour to prevent quarrels, to reconcile those who differ, to comfort the afflicted. In short, he must be " ready for every good work ; " and all his dealings with others must show the great principles which dwell and work in his heart.

RADIO STATION-CALL SI GN PREFIXES OFTHE WORLD

USED BY BROADCAST AND COMMERCIAL RADIO STATIONS

CAA-CEZ	Chile	HZA-HZZ	Hedjaz
CFA-CKZ	Canada	I	Italy & Colonies
CLA-CMZ	Cuba	J	Japan
CNA-CNZ	Morocco	K	U.S.A. & Poss.
COA-COZ	Cuba	LAA-LNZ	Norway
CPA-CPZ	Bolivia	LOA-LWZ	Argentina
CQA-CRZ	Portuguese Col.	LXA-LXZ	Luxemburg
CSA-CUZ	Portugal	LYA-LYZ	Lithuania
CUA-CXZ	Uruguay	LZA-LZZ	Bulgaria
CYA-CZZ	Canada	M	Great Britain
D	Germany	N	United States
EAA-EHZ	Spain	OAA-OCZ	Peru
EIA-EIZ	Irish Free State	OEA-OEZ	Austria
ELA-ELZ	Liberia	OFA-OHZ	Finland
EPA-EQZ	Persia	OKA-OKZ	Czechoslovakia
ESA-ESZ	Esthonia	ONA-OTZ	Belgium & Col.
ETA-ETZ	Ethiopia	OUA-OZZ	Denmark
F	France	PAA-PIZ	Netherlands
G	United Kingdom	PJA-PJZ	Curacao
HAA-HAZ	Hungary	PKA-POZ	Netherlands
HBA-HBZ	Switzerland	PPA-PYZ	Brazil
HCA-HCZ	Ecuador	PZA-PZZ	Surinam
HHA-HHZ	Haiti	R	U.S.S.R.
HIA-HIZ	Dominica	SAA-SMZ	Sweden
HJA-HKZ	Colombia	SOA-SRZ	Poland
HPA-HPZ	Panama	STA-SUZ	Egypt
HRA-HRZ	Honduras	SVA-SZZ	Greece
HSA-HSZ	Thailand	TAA-TCZ	Turkey
HVA-HVZ	Vatican City	TFA-TFZ	Iceland

RADIO STATION-CALL PREFIXES *(Continued)*

TGA-TGZ	Guatemala	YIA-YIZ	Iraq
TIA-TIZ	Costa Rica	YJA-YJZ	New Hebrides
TKA-TZZ	France & Col.	YLA-YLZ	Latvia
U	U.S.S.A.	YMA-YMZ	Danzig
VAA-VGZ	Canada	YNA-YNZ	Nicaragua
VHA-VMZ	Australia	YOA-YRZ	Roumania
VOA-VOZ	Newfoundland	YSA-YSZ	El Salvador
VPA-VSZ	British Colonies	YTA-YUZ	Yugo-Slavia
VTA-VWZ	British Indies	YVA-YWZ	Venezuela
VXA-VYZ	Canada	ZAA-ZAZ	Albania
W	United States	ZBA-ZJZ	British Colonies
XAA-XFZ	Mexico	ZKA-ZMZ	New Zealand
XGA-XUZ	China	ZPA-ZPZ	Paraguay
XYA-XZZ	British India	ZSA-ZUZ	South Africa
YAA-YAZ	Afghanistan	ZVA-ZZZ	Brazil
YBA-YHZ	Netherlands Indies		

INTERNATIONAL CODE
FRACTION SEPARATION SIGNAL ● — ● ● —
USED BETWEEN THE NUMBER AND THE FRACTION

Examples: $3\frac{1}{4}$ is to be transmitted

3 ● — ● ● — (SEPARATION) 1 — ● ● — (FRACTION BAR) ● 4

4 $\frac{1}{2}$ 4 is to be transmitted

4 ● — ● ● — (SEPARATION) 1 — ● ● — (FRACTION BAR) ● 2 ● — ● ● — (SEPARATION) 4

Various Fraction Separation Signals are used by the 3 Forces. These are confidential and cannot be mentioned here.

THE POUND SIGN (£) — ● ● — ● ● —

FOREIGN EXCEPTIONS TO THE INTERNATIONAL CODE

Ä (GERMAN) • — • —

Á OR Å (SPANISH – SCANDINAVIAN) • — — • —

CH (GERMAN–SPANISH) — — — —

É (FRENCH) • • — • •

Ñ (SPANISH) — — • — —

Ö (GERMAN) — — — •

Ü (GERMAN) • • — —

B *BARRED* — • • • — •

C *BARRED* — • — • —

P *BARRED* • — — • —

X *BARRED* — • • — •

MISCELLANEOUS SIGNS

NEGATIVE SIGN $\overline{\text{NO}}$ — • — — —

PREPARATIVE SIGN $\overline{\text{OE}}$ — — — •

URGENCY SIGNALS
- PAN • — — • • — — •
  NOT BARRED, SENT AS THREE LETTERS.
- XXX — • • — — • • — — • • —

AUTOMATIC ALARM SIGNAL (*DASHES FOR ONE MINUTE*) — — — — — *ETC.*

SEPARATIVE SIGN II • • • • *TWO LETTERS, NOT BARRED (Also called Short Break)*

READINESS SIGN $\overline{\text{NW}}$ — • • — —

COMMENCING SIGN $\overline{\text{VE}}$ • • • — • *I HAVE A MESSAGE FOR YOU*

Figure check to follow CK — • — • — • —

Go on K — • — Received correctly R • — •

Important

To dispel any doubts as to the method of calculating the rate of transmitting any signals in the Morse Code on the basis of words per minute, the following figures should be adopted.

(It has been found that the number of Morse units it takes to send an ordinary message of 20 words averages about 930 units):

Q Is 13 Units in Length — E is 1 Unit in Length

Q = 3 1 3 1 1 1 3 = 13 — E = 1

When it it desired to test any person's proficiency at a given rate, the time allowed for sending the Test Message may be arrived at by dividing 20 by the Rate Number. Thus, a Test Message of 932 units at 6 words a minute, or rate 6, should take 3 minutes and 20 seconds.

Dots, Dashes and Spaces between them, should be made to bear the following ratio one to another *in the duration of the time taken to send them* :—

A DOT is taken as a unit. A DASH is equivalent to 3 units. The space of time between any two elements of a letter or sign is equal to 1 unit, between two complete letters or signs is equal to a dash or 3 units, and between 2 words or groups is equal to 2 dashes or 6 units.

Up to ordinary limits, whatever may be the rate of sending, accuracy in signalling depends upon these rules being strictly adhered to.

JOHN READER
PRINTER
117 ASFORDBY STREET
LEICESTER